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TITLE: HIGH-FREQUENCY APPARATUS

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**ABSTRACT:**

PROBLEM TO BE SOLVED: To provide a smaller high-frequency apparatus in which a cellular phone and a portable television receiver are mounted in the same housing.

SOLUTION: The oscillation frequency outputted from a local oscillator 62 of the portable television receiver is set to be a frequency different from the transmission frequency inputted into one terminal of an antenna switch 45 of the cellular phone, the frequency outputted from a power amplifier 55, and the frequency outputted from a local oscillator 48.

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]****[0001]**

**[Field of the Invention]** This invention relates to the RF equipment with which a cellular phone and pocket television were mounted in the same case.

**[0002]**

**[Description of the Prior Art]** As conventional high frequency equipment was shown in drawing 2 , as for high frequency equipment 1, a cellular phone 2 and pocket television 3 were mounted in the same case. And the antenna switch 5 on which the cellular phone 2 was connected to the antenna 4, While the output of SAW filter 6 connected to one terminal of this antenna switch 5, the low noise amplifier 7 to which the output of this SAW filter 6 was connected, and this low noise amplifier 7 is connected to one input The mixer 9 by which the output of a local oscillator 8 was connected to the input of another side, and the demodulator 10 to which the output of this mixer 9 was connected, While the output of the voice output machine 11 to which the output of this demodulator 10 was connected, the voice input machine 12, the modulator 13 to which the output of this voice input machine 12 was connected, and this modulator 13 is connected to one input The mixer 14 by which the output of a local oscillator 8 was connected to the input of another side, and the power amplifier 15 to which the output of this mixer 14 was connected, PLL circuits 17 by which loop-formation connection was made were consisted of by the low pass filter 16 connected between the output of this power amplifier 15, and the other-end child of the antenna switch 5, and said local oscillator 8.

[0003] Moreover, while the output of the antenna 20 into which a terrestrial digital signal is inputted, the high-frequency amplifier 21 connected to this antenna 20, and this high-frequency amplifier 21 is connected to one input, the pocket television 3 While the output of the mixer 23 by which the output of a local oscillator 22 was connected to the input of another side, the band pass filter 24 to which the output of this mixer 23 was connected, and this band pass filter 24 is connected to one input The mixer 26 by which the output of a local oscillator 25 was connected to the input of another side, and the demodulator 27 to which the output of this mixer 26 was connected, PLL circuits 30 by which loop-formation connection was made were consisted of by the image display machine 28 connected to the image output terminal of this demodulator 27, the voice output machine 29 connected to the voice output terminal of a demodulator 27, and said local oscillator 22.

[0004] And between a cellular phone 2 and the pocket television 3, as for shielding according to individual prepared in the respectively independent cellular phone 2 or the pocket television 3, the special shielding plate 31 was formed independently. Since active jamming is not produced between a cellular phone 2 and the pocket television 3, it is equipped with this special shielding plate 31. That is, if this shielding plate 31 does not exist, since the oscillation frequency of a local oscillator 22 leaks to a cellular-phone 2 side, and a noise can go into a cellular phone 2 or it is possible to become message impossible when the worst etc., it is for preventing this.

**[0005]**

**[Problem(s) to be Solved by the Invention]** However, with such a conventional configuration, the special

shielding plate 31 needed to be formed apart from shielding according to individual prepared in the respectively independent cellular phone 2 or the pocket television 3. Therefore, there was a problem of enlarging inevitably.

[0006] This invention solves such a trouble and aims at offering the miniaturized RF equipment.

[0007]

[Means for Solving the Problem] Let the oscillation frequency to which the high frequency equipment of this invention is outputted from the 2nd local oscillator in order to attain this purpose be a different frequency from the frequency inputted into one terminal of an antenna switch, the frequency outputted from power amplifier, or the frequency outputted from the 1st local oscillator.

[0008] Thereby, this RF equipment can be miniaturized.

[0009]

[Embodiment of the Invention] The antenna switch on which invention of this invention according to claim 1 is high frequency equipment with which a cellular phone and pocket television were mounted in the same case, and said cellular phone was connected to the antenna, While the output of the filter connected to one terminal of this antenna switch, the low noise amplifier to which the output of this filter was connected, and this low noise amplifier is connected to one input The 1st mixer by which the output of the 1st local oscillator was connected to the input of another side, The 1st demodulator to which the output of this 1st mixer was connected, and the 1st voice output machine to which the output of this 1st demodulator was connected, While the output of the voice input machine which changes voice into an electrical signal, the modulator to which the output of this voice input machine was connected, and this modulator is connected to one input The 2nd mixer by which the output of said 1st local oscillator was connected to the input of another side, It consists of the power amplifier to which the output of this 2nd mixer was connected, and the low pass filter connected between the output of this power amplifier, and the other-end child of said antenna switch. While the output of the antenna into which a terrestrial digital signal is inputted, the high-frequency amplifier connected to this antenna, and this high-frequency amplifier is connected to one input, said pocket television The 3rd mixer by which the output of the 2nd local oscillator was connected to the input of another side, The band pass filter to which the output of this 3rd mixer was connected, and the 2nd demodulator with which the output of this band pass filter is supplied, It consists of the image display machine connected to the image output terminal of this demodulator, and the 2nd voice output machine connected to the voice output terminal of said 2nd demodulator. The oscillation frequency outputted from said 2nd local oscillator The frequency inputted into one terminal of said antenna switch, the frequency outputted from said power amplifier, and the frequency outputted from said 1st local oscillator are RF equipment made into a different frequency. By choosing the oscillation frequency of such 2nd local oscillator, like before Even if shielding according to individual prepared between a cellular phone and pocket television at a respectively independent cellular phone or pocket television does not independently form a special shielding plate, the oscillation frequency of the 2nd local oscillator cannot do active jamming to a cellular phone, and it can attain a miniaturization. there is no special shielding plate by this -- \*\* -- a noise does not go into a cellular phone

[0010] C/N worsens and an error seems moreover, not to increase, since neither the output of the 1st local oscillator nor the output of power amplifier does active jamming to the 2nd local oscillator.

[0011] The intermediate frequency signal with which a terrestrial digital signal and the 2nd local oscillator are mixed, and invention according to claim 2 is outputted from the 3rd mixer is 1202MHz or more, and is RF equipment according to claim 1 set up so that it might change with 1208MHz or less, and it can be managed so that an active jamming frequency may not generate easily with an intermediate frequency.

[0012] Hereafter, the gestalt of operation of this invention is explained based on a drawing. Drawing 1 is the circuit diagram of the RF equipment in the gestalt of 1 operation of this invention. As for the high frequency equipment 41 of this invention, a cellular phone 42 and pocket television 43 are mounted in the same case. And the antenna switch 45 on which the cellular phone 42 was connected to the antenna 44, The SAW (surface acoustic waves) filter 46 connected to one terminal of this antenna switch 45,

While the output of the low noise amplifier 47 to which the output of this SAW filter 46 was connected, and this low noise amplifier 47 is connected to one input The mixer 49 by which the output of a local oscillator 48 was connected to the input of another side, and the demodulator 50 to which the output of this mixer 49 was connected, The voice output machine 51 to which the output of this demodulator 50 was connected (a loudspeaker or receiver), While the output of the voice input machine (microphone) 52 which changes voice into an electrical signal, the modulator 53 to which the output of this voice input machine 52 was connected, and this modulator 53 is connected to one input The mixer 54 by which the output of a local oscillator 48 was connected to the input of another side, and the power amplifier 55 to which the output of this mixer 54 was connected, PLL circuits 57 by which loop-formation connection was made are consisted of by the low pass filter 56 connected between the output of this power amplifier 55, and the other-end child of the antenna switch 45, and said local oscillator 48.

[0013] Moreover, while the output of the antenna 60 into which a terrestrial digital signal is inputted, the high-frequency amplifier 61 connected to this antenna 60, and this high-frequency amplifier 61 is connected to one input, the pocket television 43 While the output of the mixer 63 by which the output of a local oscillator 62 was connected to the input of another side, the band pass filter 64 to which the output of this mixer 63 was connected, and this band pass filter 64 is connected to one input The mixer 66 by which the output of a local oscillator 65 was connected to the input of another side, and the demodulator 67 to which the output of this mixer 66 was connected, PLL circuits 70 by which loop-formation connection was made are consisted of by the image display machines (a liquid crystal display or Braun tube) 68 connected to the image output terminal of this demodulator 67, the voice output machine 69 connected to the voice output terminal of a demodulator 67, and said local oscillator 62.

[0014] Here, the digital terrestrial signal inputted into the antenna 60 of the pocket television 43 consists of a VHF band (90MHz - 220MHz) and a UHF band (470MHz - 770MHz), and the operating frequency of a cellular phone 42 consists of the 1.5MHz band (1270MHz - 1500MHz) and WCDMA band (1920MHz - 2170MHz) of PDC.

[0015] The frequency of a local oscillator 62 was controlled and the bad influence between a cellular phone 42 and the pocket television 43 is prevented so that the intermediate frequency outputted from the mixer 63 of such pocket television 43 used for a frequency band may be set as 1205MHz. In addition, this intermediate frequency has secured the big safety of whenever [ allowances ] more by setting it as that middle value (1205MHz) with the gestalt of this operation that what is necessary is just 1202MHz or more 1208MHz.

[0016] By setting it as such a value, the oscillation frequency outputted from a local oscillator 62 can be made into the frequency outputted from the frequency (received frequency of a cellular phone) inputted into one terminal of the antenna switch 45, the frequency (transmit frequencies of a cellular phone) outputted from power amplifier 55, and a local oscillator 48, and a different frequency.

[0017] Thus, by choosing the oscillation frequency of a local oscillator 62, shielding according to individual prepared in the respectively independent cellular phone 2 or the pocket television 3 does not independently need to form the special shielding plate 31 between a cellular phone 2 and the pocket television 3 like before. That is, the oscillation frequency of a local oscillator 62 cannot do active jamming to a cellular phone 42, and a miniaturization can be attained. therefore -- there is no special shielding plate 31 -- \*\* -- a noise does not go into a cellular phone 42

[0018] C/N of the pocket television 43 worsens and an error seems moreover, not to increase, since neither the output of a local oscillator 48 nor the output of power amplifier 55 does active jamming to a local oscillator 62.

[0019] Moreover, since it has managed by the intermediate frequency signal outputted from a mixer 63, the frequency outputted from a local oscillator 62 is manageable so that an active jamming frequency may not generate easily.

[0020]

[Effect of the Invention] According to the RF equipment of this invention, the oscillation frequency outputted from the 2nd local oscillator as mentioned above Since it is considering as a different frequency from the frequency inputted into one terminal of an antenna switch, the frequency outputted

from power amplifier, or the frequency outputted from the 1st local oscillator. Like before, even if shielding according to individual prepared between a cellular phone and pocket television at a respectively independent cellular phone or pocket television does not independently form a special shielding plate, the oscillation frequency of the 2nd local oscillator cannot do active jamming to a cellular phone, and it can attain a miniaturization. There is no special shielding plate by this -- \*\* -- a noise does not go into a cellular phone

[0021] C/N of pocket television worsens and an error seems moreover, not to increase, since neither the output of the 1st local oscillator nor the output of power amplifier does active jamming to the 2nd local oscillator.

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[Translation done.]

## \* NOTICES \*

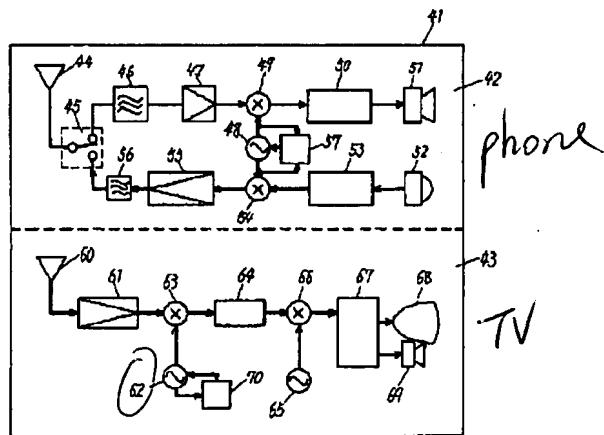
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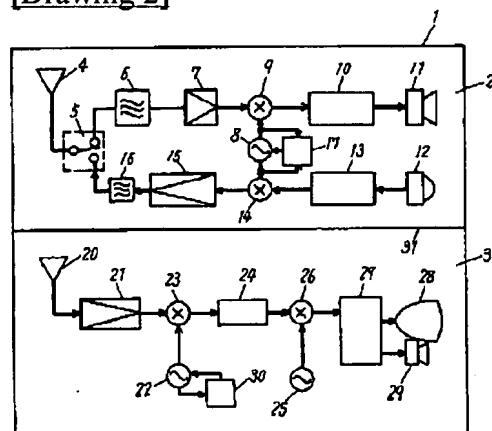
## DRAWINGS

## [Drawing 1]

41	高周波装置	50,67	復調器
42	携帯電話	51,69	音声出力器
43	携帯テレビ	52	音声入力器
44,60	アンテナ	53	変調器
45	アンテナスイッチ	55	電力増幅器
46	SAWフィルタ	56	ローパスフィルタ
47	低雑音増幅器	61	高周波増幅器
48,62	局部発振器	64	バンドパスフィルタ
49,54,63	混合器	68	画像表示器



## [Drawing 2]



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[Translation done.]